ITEMS OF INTEREST.

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Thots from the Profession.

THE "AMERICAN SYSTEM"—PROSTHETIC DENTISTRY.

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The recently published "American System of Dentistry" claims to be a complete exposition of all that pertains to every department of dentistry, presented by a large array of writers, most of whom are known to the profession. They have furnished a great amount of information, both new and old.

Without saying anything in regard to the work as a whole, I am impelled to utter my protest to much that is contained in the department of Prosthetic Dentistry, and purpose, in a series of articles, to show the unfairness and demerits of much there presented. A considerable portion of it, and especially that relating to "Dies and Counter Dies," is a rehash of the old methods that have been furnished in previous text-books, only more diffusive and verbose, nothing new. If a dental student has patience to wade through twenty-one pages of what should have been condensed into one-quarter the space, he certainly would give up in despair in the attempt to master the details in practice.

It is not surprising so many dentists become disgusted with "metal work" and fall back on rubber, because the methods are made so difficult, while the simpler methods are ignored, or brushed aside as with a wave of the hand.

It would seem as though forty-two years' experience, exclusively in the practice of prosthetic dentistry, of one whose preceptor made the first suction-plate, and whose work has been mainly metal, including thirty-two years of continuous gum-work (having been one of the first to purchase an office-right of Dr. Allen) gave him authority and reliability in the advocacy of methods he has used with most satisfactory results, not only in his own practice, but in work done for other dentists in all parts of the country. He will challenge any one to show better

results than have been attained by these methods, not only in their practical working, but in the time required to accomplish them.

I will go farther and say, select a dozen of the most difficult cases, full upper or lower, partial upper or lower (and the latter are the most difficult), to be made on gold or continuous gum, and I will agree to produce from the impression in less time more satisfactory results than can be obtained by any other method.

Then, again, these methods have been adopted by hundreds of dentists in all parts of the country, and I have yet to learn of one who has thus adopted them who would again return to the use of zinc with its annoyances. A dentist, who was doing a large amount of metal work, said to me: "It makes me mad when I think how, for twenty-five years, I have been annoyed with zinc dies, while there was in use a metal so much more satisfactory in its results."

The writer on

"DIES AND COUNTER DIES"

in the "American System" clearly shows that he had no practical knowledge of the use of a proper Babbitt metal; if he had, he could never have honestly written what he did. The least he could have done would have been to publish a short statement of these methods, to be found in nearly every dental journal—a page would have sufficed —then the student, or practitioner could have judged for himself and adopted or discarded as he saw fit. I do not pretend that plates cannot be fitted from zinc dies, but do claim that there is a better and more simple method.

AIR-CHAMBERS.

At this late day, when so many are discarding "air-chambers" as useless in full plates, the only method he furnishes for suction-plates is in the use of these "suction-cavities;" and he gives illustrations of size, shape and location on the plate, and also tools for striking them up. Yet there is no more need for their use than a "fifth wheel to a coach."

Of all the abominations in shape of air-chambers the "Cleveland" is the worst. Twenty-five years ago I was guilty of making a considerable number of them. I occasionally see one and its effects on the membrane, and feel ashamed of myself that I ever perpetrated such an outrage; yet we here find two or more pages devoted to an elaboration of methods for making them.

Why not, at least, have devoted a little space to instructing the novice in the method of fitting plates without these contrivances?

CUTTING OFF THE TEETH FROM PARTIAL CASTS.

We are informed it is "unworkmanlike" to cut off the teeth

from a plaster cast in partial cases before molding! Wherein, pray? Without them the case can be far more easily molded; then after the cast is made they must be cut off from that (a delightful job), or else there will be difficulty in separating die and counter; then, it is more difficult to swage the plate, and finally there is no possible necessity for retaining them.

THE USE OF CORES.

The use of cores is commended, and as these originated with myself, I am glad to know he has found something to commend in my methods. But here he is badly at fault, for he says: "Were it not that it takes so long to dry the plaster, there would be no necessity for mixing any thing with it; but this being the case, it still makes no difference what is mixed with it, be it sand, pumice, or asbestos."

Now, the fact is, were the plaster dried ever so slowly it would still shrink and warp and be useless; and there *is* a decided preference as to the material mixed with it, for the asbestos has a fiber, and so holds the plaster and prevents its breaking when separating from the die, and if necessary can be used several times.

OILED SAND.

He says he does not advise the use of *oiled* sand. I would not advise him to use it so long as he makes zinc dies, for the zinc is so hot when poured it would burn the oil all out; but I can tell him that with it there is no such thing as "blubbering" as when water is used; that is unknown in my experience.

THE SIZE OF THE FLASK.

Instead of using a flask of proper size, he uses such small ones he is compelled to pack the sand with his fingers to "avoid injury to the cast." Then he says it is better to mold or pack lightly and to remove the cast from the mold with the fingers, or with a pointed instrument; and tells how he has to avoid inverting the mold, and how he blows out the sand that has fallen into it with a glass tube; and I forgot to mention that he says the cast must be set *face upwards* to mold!

Well, it is a long story before reaching this point in the process. Does he know, with a ring sufficiently large, say 4 or 5 inches in diameter and 3 inches deep, the sand can be packed solid, and when so packed there is a better mold? The cast will every time deliver itself, if made flaring, and mar the mold less than any one possibly can by lifting; neither is it necessary to tap it. But if it does not in some cases drop by lifting the mold, then jar the edge of the flask on the edge of the molding-box.

BABBITT METAL.

Speaking of Babbitt metal, he seems to think its advocates consider

its "low-melting" quality as its chief feature, for he says: "Convenience of a melting point lower by a few degrees, *is offset by the expensiveness* of the alloy; the greater risk of dies uniting and care needed in handling on account of their *softness* or *brittleness!*"

Of the five requisite qualities for a dental die—and the Babbitt alloy is the only one that has them—are: non-shrinkage, hardness, toughness, smoothness, and low-melting quality. It will be seen that the melting point is the last on the list and of least importance; yet is of importance, for with it sand can be oiled, and one who has thus used the sand for several months will not abandon it, not only for its great convenience, but to avoid the "blubbering" our author takes such steps to avoid.

Its *expensiveness;* well, it would cost an office doing a considerable amount of metal work perhaps $3.00 a year, for the alloy is durable and does not waste as zinc.

The "*greater risk of dies uniting.*" There is *no risk* if one will add 1/8 to 1/6 tin, and the tin is necessary aside from this, as pure lead is *too soft* for counters and the tin hardens it.

"Care needed in handling on account of their softness or brittleness!" This last item is almost too ludicrous to reply to; but he states in another place that "with zinc two dies and counter dies are *always* necessary, but with the *softer* metals (Babbitt for instance) *more* dies are necessary and this adds to the difficulty." We will "kill these two birds with one stone" by simply stating that I seldom have occasion to make the second die, and then not always the second counter. And yet I find no rocking of plates on the die, nor on the cast, nor in the mouth. *Au revoir*, zinc!

[TO BE CONTINUED.]

THE PHYSICAL PROPERTIES OF VULCANITE.

DR. GEORGE B. SNOW, BUFFALO.

The following experiment illustrates the shrinkage of rubber by vulcanizing. Half a sheet of Doherty's black rubber was packed into a mold and vulcanized in the form of an oblong block. Its specific gravity was found to be 1.1974. The specific gravity of the other half of the same sheet was 1.1333. This indicates a shrinkage in bulk of about five per cent.

When rubber is vulcanized in thick masses, it is a common experience to find it soft and spongy in the center; and when the soft part is cut into, a strong odor of sulphuretted hydrogen is exhaled. It is not proposed to advance any hypothesis here to account for this phenomenon. So far as the use of rubber in dentistry is concerned, it will suffice to point out the means by which this annoying accident may be avoided.

It has been usual to direct the heat to be very slowly raised from 250° or 260° to 320° when the piece to be vulcanized is of more than the usual thickness. Experiments in vulcanizing thick masses have, however, given results which have led the writer to the opinion that a certain degree of sponginess will be found, even when a very long time has been taken to bring up the heat, if it is allowed to exceed a certain point; while on the other hand, the temperature may be raised without any special care as to the time occupied, if it is not allowed to reach the point above referred to. It has also been ascertained that under the usual management, thermometers will vary considerably in their indications; and that many a piece of rubber is vulcanized at 335°, 340°, or even 350°, when the dentist has no idea the temperature has exceeded 320°.

The great source of irregularity in the action of thermometers is the presence of air in the vulcanizer. The mixture of air and steam above the water is a bad conductor of heat. As it varies in quantity, according to whether the water level is higher or lower, and as the proportion of air and steam may also vary, it will be seen that a variable obstacle is placed in the way of the heat as it passes to the thermometer bulb. It is no uncommon thing to see the indications of a thermometer, as compared with the action of a steam-guage or gas-regulator, vary even as much as 20°, before and after the air has been expelled from the vulcanizer. When the air is expelled, the thermometer, though it may not indicate the temperature due to the pressure of steam in the vulcaizer as shown by the guage, will at least be constant in its variation; consequent on the presence of air in the steam-space may be 5°, 10°, or 20°, and cannot be predicted with any certainty.*

It may be laid down as a rule, then, that the results attained will be uniform if enough steam is allowed to escape from the vulcanizer while it is heating, to carry off with it the confined air. If the vulcanizing is done in a steam chamber, this rule is of double importance.

The question is here raised as to the advisability of exchanging the thermometer for the steam guage. While the latter is a better instrument for indicating the temperature in the vulcanizer than the thermometer, it is expensive and easily damaged; and in behalf of the thermometer, it may be said that its cheapness, and the ease with which

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*The experiments above referred to demonstrate conclusively the variation in the indications of thermometers depending on the presence or absence of air in the vulcanizer, some Dental Manufacturers therefore have a convenient blow-off valve to all their vulcanizers, by means of which the air can be easily expelled. Experience will soon convince the dentist of the utility of this measure, and in fact the necessity, if uniformity in results in vulcanizing is desired.—[Ed. Items.]

it may be replaced when broken, will always render it the favorite heat indicator for vulcanizers. If its variation can be made constant in the manner heretofore pointed out, it is not of importance that it shall indicate the true temperature. The 320° point has been assumed as a standard, but it can be varied from, according to the pleasure or judgment of the operator, and it is believed that the dentist will be able to improve the quality of his vulcanizing by attention to the following hints:

If the time necessary to attain the proper hardness in vulcanizing is one hour, with the thermometer standing at 320°, or less, it affords fair grounds for the presumption that the temperature is really higher than is apparently indicated, and if unusually thick pieces are to be vulcanized it will be better to subject them to a lower heat and longer time; say at such a temperature that from one and a half to two hours will be required, leaving out of account the time spent in heating up. If this is done, no bad effects will follow the application of a sufficiently strong heat to attain the vulcanizing temperature in, say, fifteen minutes.

In fact, the texture and toughness of dental plates would be much improved if they were vulcanized for one and a half or two hours and at a lower temperature than is generally used. The impatience of the operator and his desire to do his work quickly, leads to its deterioration in quality.

Another way of overcoming the tendency to sponginess in thick masses of vulcanite, is by mixing with the compound, fragments of old plates or other pieces of rubber already vulcanized, when packing. These should be freshly filed, so as to present a clean, rough surface on all sides to insure the firm attachment of the new rubber. By using a quantity of these pieces, the tendency to sponginess will be obviated without any dimunition in the strength of the piece; with the additional advantage of diminishing the shrinkage of the mass: as that part of it which has already undergone vulcanization can only shrink by a change of temperature.—*Dental Advertiser.*

Dr. Melotte's Method of Bridge-work.—Dr. Geo. W. Mellotte, of Ithaca, N. Y., has presented some ideas on bridging to the Section which we consider of sufficient value to receive the consideration of those interested, and suggest the selection of a time when Dr. Melotte and others with such special methods may be seen and heard. Dr. Melotte has furnished the following formulas: For impression material, potter's clay, mixed with glycerin to form a stiff paste. For fusible metals, bisbuth 16 parts, tin 10 parts, and lead 6 parts.—*American Dental Association.*

YIELDING TO TEMPTATION.

DR. F. W. HILL, HAMBURG, IOWA.

In April ITEMS Dr. G. W. Adams presents a suggestive article relating to that kind of malpractice which grows out of a disposition to yield to the whims and caprices of patients.

As to the final resting place of a dentist who fills front teeth with amalgam—well, since all *good* dentists go straight to heaven, this amalgam artist must reach the golden gates by climbing some back stairway. Crawling in, he is probably assigned a room in the amalgam apartment. If a patient is absolutely unable to pay for gold fillings in front teeth, and I feel equally unable to donate the expense for "sweet charity's sake," I should use oxyphosphate. By cleaning and drying the cavity thoroughly, and giving ample time for the cement to harden before removing the rubber dam, which should always be used, a very good and comparatively durable filling is obtained.

Dr. Adams lays down the proposition that in the practice of dentistry "judgment and self-interest often clash," and draws the conclusion that it is more remunerative and more satisfactory to yield to the whims of petulant patients than to act up to our own convictions of what is right and best for the patient. In filling and extracting teeth we know better than the patient what is best. Then why not deal honestly with him and with ourselves?

Would a surgeon, honest and competent, amputate a limb simply because the patient was suffering great pain, or because another surgeon might be employed if we refused? Have we any better right to perform a minor operation in surgery that *we know* will inflict on the patient a life-long injury? Will our conscience be quieted with the thought that he would have gone elsewhere with his little fee?

I, too, have a case in point. Some months since a young woman desired me to extract a left upper first molar with a simple crown cavity. I told her the tooth could be saved, but as she was suffering she insisted on extraction. As I declined, the lady departed, saying that she would go to Dr. ——, a physician, who would extract it. Not finding the M. D. such an ignoramus as she had expected, she soon returned, saying he had advised her to have the tooth filled. The lady has the tooth to-day, of course, and now she never dictates how her teeth shall be operated on.

The fact that people consult us implies that they confide in our professional skill. Let us but have the moral courage to do what our professional knowledge teaches us is right, and in time they will confide in our integrity and sense of honor. Any other course may bring temporary gain, but it will in time lead to the death-damps of a financial grave, on whose tomb-stone will be inscribed, "Condemned—dentist for revenue only."

TOOTH POWDER.

DR. G. W. ADAMS, BRISTOL, PA.

From receipts given I am lead to believe pumice is often an ingredient of tooth powder! Is not this a step backward? Was it not well settled, some twenty years ago, that all of the ingredients of a tooth powder should be soluble in the fluids of the mouth? Time was, when the common tooth powder, was *vile trash!* Made by compounding pumice, orris root, rose pink, charcoal, gum myrrh, etc., in different proportions. But a better day came; and all these but orris root were abandoned. Prof. G. T. Barker introduced a powder composed of chalk, cuttle-fish, orris, sugar and carmine. This was a great improvement. Each article being soluble except the cuttle-fish bone. In time *that* was left out, *then* we had a soluble compound. The high pressure of "Young America" may desire a more active, gritty powder; something that will do its work quicker. But the immediate speed secured is at the expense of insoluable grit around the necks of the teeth, under the free edge of the gums. As made at the present time, and for many years, the formula of "Adams' Tooth Powder" stands:

℞ Best Eng. precip. chalk.....4 lbs.
Pulv. orris root.....1 lb.
Carmine (No. 40).....1 ʒ
Pulv. sugar.....3 lbs.
Ol. Rose.....1 ʒ

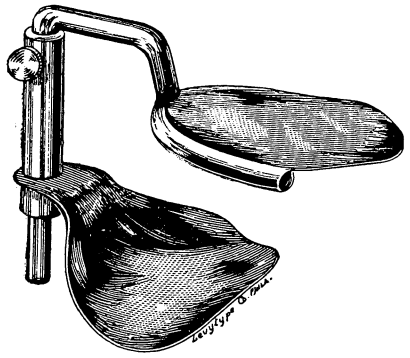
Grind the carmine before mixing. Put the first three ingredients together; *grind well* and pass through sieve No. 60. Then add the sugar and thoroughly incorporate it with the other ingredients. Lastly, add the oil of rose, and mix the mass again thoroughly. The addition of a little aq. am. before the last mixing will assist in bringing out the color. When finished, the powder must be kept under seal.

This powder is nearly always beneficial and never hurtful. It does not create as much friction as powders having grit; but it does the patient no harm if it does him no good. Ground pumice as a *scouring* article is used on the teeth with a stick by hand, or by a wood point in the engine; but when the operation is completed the grit should be thoroughly washed away. This scouring and washing should be followed by a good rubbing with tooth powder on muslin. Some use the ordinary napkin, wrapt around the index finger; wetted and dipt in the powder; but it is more economical, to have several fine muslin pieces ready, six or eight inches square. These muslin squares are also good with the pumice powder for scouring.

Charcoal, though a good disinfectant is an abomination in the mouth. It is insoluble, however fine you grind it, and like all other insoluble grit you cannot wash it entirely from the necks of the teeth.

MIRROR TOPPED SYPHON TONGUE HOLDER.*

DR. D. GENESE, BALTIMORE, MD.
President of State Dental Society of Maryland.



In preparing cavities in the lower jaw where a copious flow of viscid saliva is present, much time is lost and great inconvenience is felt by patient and operator. Absorbents fill the mouth and soon get useless and a pipe syphon irritates the tongue and keeps it continually rolling into the cavity one wants to prepare while just as the patient is in a good position, the necessity occurs to empty the mouth and the operator looses precious time.

The rubber dam in such cases consumes much time, is often defective and moisture accumulates so fast under it that the patient gets distressed and often the clothes spoiled by the escape of saliva under the dam.

It is also a recognized fact that a plentiful supply of warm water to syringe cavities, getting rid of debris from the undercuts is the dentist's greatest safeguard from troublesome marginal defects found so soon after completing fillings in mouths filled with viscid saliva, which almost glues the debris to the dentine. The posterior operations require good reflected light which cannot be obtained when the mouth is filled with cloths or rubber.

This instrument enables such operations to be performed rapidly and with less fatigue to patient and operator. It keeps the tongue out of the way, shows a fine light on the teeth and carries all fluid away as soon as formed on floor of the mouth.

Under anesthesia it will relieve the patient from the distress of swallowing the blood, the same in operations on cleft palate, or in spraying the fauces where the desire to swallow occurs almost as soon as the operation commences. It enables the dentist to have the cavity ready for plastic fillings before mixing the material and not to hurry the manipulation, thereby destroying its working properly by too much haste while the material is being introduced, and it *leaves both hands at liberty* without the fear of the tongue getting in the way.

It is made of German silver, nickle plated and highly finished, with three sizes of depressors, which will be found all that is required.

*Read before the Baltimore Medical Society, Monday, March 28th, 1887.

It is easily kept clean and is rapidly handled. It can also be worked with a ball syringe, but a flow of water is preferred. It will syphon a pint per minute if desired, and, by the arrangement of the inlets, no undue pressure is felt on the soft tissues on the tongue during the operation. Its capacity has been tested in many cases, in one of which the patient retained it in the mouth from commencement to finish of three large crown fillings, taking two hours, during which time the head was not removed from the rest of the chair. For operations in children's mouths nothing can equal its usefulness in certain cases, and used in connection with the speculum shown at the State Dental Society of Maryland and also in New York, it will enable dentists to facilitate hitherto difficult operations, making them easily and quickly accomplished with better results than with the old method of operating in small mouths with excessive flow of saliva.

TO PREVENT DARK JOINTS.

1. Never grind the joint to a dovetail, but perfectly square.

2. Fit the joint perfectly, and examine it when dry, not wet.

3. Before flasking cover the joint on the outside with a good quality of oxyphosphate and let it set perfectly.

4. After flasking, cover the joints on the inside also, with a good quality of oxyphosphate and let it set thoroughly before allowing it to become moist.

5. Do not use more rubber than necessary; if you cannot guess well, gauge the wax and then the rubber.

6. Heat the flask gradually and use steady pressure, having plenty of gateways for the surplus.

TO PREVENT BLOCKS FROM CRACKING.

1. Observe the above six rules.

2. Select the blocks so that you need not grind the inner surfaces and thus weaken them.

3. Have wax between block and marble, so that rubber may flow between the two.

4. Heat up gradually, not using too much rubber, and having sufficient exits; use steady pressure while as hot as boiling water.

5. Heat and cool the vulcanizer gradually; let it get entirely cooled before taking the teeth from the flask.

6. Use common sense while filling the rubber about the blocks. Remember that the blocks are made of porcelain, and can be broken; also, keep the plate slightly moist while filing and scraping.

If these rules are faithfully observed you may, perhaps, break a block or make a dark joint, as I do, about once in ten years.

Mechanical Dentist, in Den. Review.

ETIOLOGY IN DISEASE, AND CARIES IN PREGNANCY.

WM. H. ATKINSON, M. D., IN FIRST DIS. DEN. SOCIETY OF N. Y.

Etiology is beginning to be studied with the purpose of laying bare the "causes," the very beginnings of the changes called disease. I allude to the fashion of referring every change of function to a specific "microbe," "micro-organism," "micrococcus,"—any and all of which may *mark* stages of antecedents and sequences in functional changes, but never *cause* in any other sense than sequent of a previous change of functional current. It is fair to assume that all the so-called proofs of specificity of infection depend on the introduction of a virus into an already debilitated body. This is proved by the fact of the non-inoculable character of persons in full health and action. It has become an aphorism with pathologists that "the innocent and timid are caught, while the wicked go on in exposure to infections uninfluenced." Where then, are we to look for the beginnings of disease? Beyond all dispute, in the range of affinities which make the sum of individual and societary personalities. Do you say,—"But that is too fine spun and difficult of apprehension to be easily grasped and comprehended?" But we will never be able to intelligently abolish the disease we deprecate till this field has been thoroughly conquered. Some one says, "Give us something practical." The answer is, to know how to antidote or avoid mischief it must first be known in character and conduct. In the majority of cases in civilized society "pregnancy" is accompanied by a tendency to decay of the teeth. Much speculation has been indulged by medical men on this subject. Even the common people have observed the fact and recorded it in the saying, "The mother loses a tooth for every child she bears." This might seem to concede that these were necessary and unavoidable conditions, and that it is folly to attempt to remedy them. But I advocate, in positive terms, that it is the duty of the dentist to attempt to save the teeth of pregnant patients with the same zeal he does those not in this state, though it is more difficult.

Materia medica is a record of observed results of remedies. These observed "facts" are subject to vary with the degree of ability, idiosyncrasy, and other peculiarities of the person, and circumstances under which they occur. And if diversity of record is any criterion by which we should be governed in our own investigations, the catalog of reliable remedies will be small indeed. One strong factor in the action of a medicine is the will and confidence of the administrator in its efficacy. Another important consideration is the faith and willingness of the patient on whom the remedy is to act. Were we to require a clear statement of how the drug acts we should have to use many interrogation marks at the end of the majority of the statements of what are called "facts." For instance, who can tell us just how a cathartic,

emetic, sudorific, stimulant, sedative, or alterative acts to bring about the proposed cure? The fact is, therapeutists are of so easy virtue as to take the statements of others for granted rather than to pursue to the end of demonstration the query raised as to the molecular, tissual, organic, systemic, conscious, and affectional changes in health and disease. To tell just how any body or energy acts on function and factor of function, we must comprehend that the classification be not of the article, but the sequence on the system of its presence. The personal presence of friend, enemy, or he who comes to act as a healer of the maladies to which the patient is subject, may act as an emetic, cathartic, sudorific, stimulant, or sedative, simply by his bearing in look, word, manner, or manipulative management, without the administration of a drug called by any of these various names, in consequence of former administrations which were followed by these profluvia or other changes in function. From just such observations the different schools in medicine had their origin. The idea of specificity of effect attaching to identity of drug gave rise to the classifications of which I am complaining as inconclusive and misleading. This asserted specificity of effect of the substances given also led to another supposition also of specificity of origin of departures from normal actions in the system, and gave rise to classing diseases as general and specific. Under this head are found the diseases which depend on the introduction of a morbific agent into the body, such as syphilis, variola, scarlatina, measles and whooping-cough, etc. If the same law holds good in diseases of of the teeth as in other parts, we will be justified in considering decay as possible only in such teeth as are imperfect in construction and nourishment, which debility lays them liable to infection by perceptible or imperceptible agency. This is the battle-ground of effort to arrive at the inception and progress of the disintegrating processes constituting decay. The degrees, then, of imperfection in structure and nourishment will mark the limits of possibility in arrest and cure. Where the debility is confined to particular portions of the tooth-body, removal of that portion, and introduction of an indistructible substance sufficiently resistant to prevent wear, will effect the preservation of the tooth. But if the weak spot is neglected till dissolution form a cavity, and no attempt be made to arrest the progress of decay, extension is liable to invade the well-formed portions in most teeth. Where sickness of the whole system, especially abberations in the chylopoetic tracks, have conduced to the commencement of decay in fissures and other secluded parts of the teeth, a return to health of the digestory apparatus often induces arrest of the decay by a return of the local nutrition, thus converting the softened tracts into reconsolidation through eburnification, leaving the cavities hardened and blackened and proof against further

attacks of decay. It is this disturbance of the digestion in pregnancy which constitutes the special liability in such instances. If lactation be included in the term "pregnancy" in the caption of this paper, we may then catalog increased liability to decay in pregnancy with a greater show of consistency and better comprehension of the mass appearance known as *decay*, which is the result of the finer and more obscure molecular changes accompanying formation and nutrition of the teeth and other organs of the living body.—*Cosmos.*

THE EFFECT OF ALCOHOL.

J. F. SANBORN, M.D., D.D.S., TABOR, IOWA.

Alcohol on going to the stomach precipitates the pepsine from the gastric juice, so that digestion is suspended till the alcohol is absorbed and a new supply of the gastric juice has been secreted. So we see that alcohol on its first entrance into the system acts as a brake on the wheels of life.

On being absorbed from the stomach it passes to the liver which becomes hardened by the coagulating of the albumen of its tissue, so that it cannot perform its functions. Here again it acts as an obstruction to vital action; it then passes to the heart and lungs where a portion of it is given off in breath; from the lungs it passes to the heart and arterial circulation.

In the lungs the red blood corpuscles unload carbolic dioxide and load up with oxygen. On making this change, the dark color of the venous blood is replaced by a lighter color peculiar to arterial blood.

Alcohol as it comes in contact with the arterial blood deprives it of its oxygen to a variable extent, and, while in the arteries, changes the blood from arterial to venous by replacing the oxygen with carbonic dioxide. If the quantity and strength of the alcohol is sufficient to absorb all the oxygen, there would be none left to be used to oxidize the tissues, and vital action would cease for want of force to carry it on. This would occasion a sudden death by asphyxia—a deprivation of oxygen, and analogus to drowning.

The word toxic means poisonous; to intoxicate means to poison, and by general usage it means to poison with alcohol.

The toxic effect varies with the different persons.

If only enough is used to absorb a part of the oxygen, and there is still enough left for the heart and lungs to keep up vital action, but not sufficient for the brain to enable it to continue voluntary action, then the person will be dead drunk.

The action of alcohol in displacing water from fresh animal tissue, is also injurious. Liebig took 141 grains of fresh animal membrane

which contained 34 grains of dry substance and 107 grains of water—this he soaked in alcohol; when removed the membrane contained 32 grains of alcohol, and had lost 99 grains of water. For every volume of alcohol retained, more than three volumes of water had been expelled.

This property of alcohol, to displace water in the tissues, explains why a person is so thirsty on recovering from a drunken debouch; the the system is calling for water to enable it to go on with its life's work.

Verily alcohol acts as an enemy whenever it comes in connection with life action.

If the quantity of alcohol is still less and the amount of oxygen it absorbed from the blood is still less so that the brain has power of co-ordinating muscular action, then just in ratio as it has this power furnished it, just in that proportion is it able to control voluntary motion, and the person may stagger or walk straight as the case may be.

Alcohol used in small quantities is said to act as a stimulus. The word stimulus is from the Latin, and means a goad, a spur, a whip, a something to urge on.

Whenever there is animal life there must be a time for action and a time for rest. In accordance with this law the heart has its time for action and its season for comparative rest.

During the hours of our activity it beats 72 times a minute, 4320 times an hour; but during hours of rest it beats 62 times a minute, and for the 24 hours it averages 100,000 beats, which is equal to the labor of raising a ton 115 feet.

This is the amount of work performed by the heart of a healthy full grown man under ordinary circumstances of life.

Experiments have demonstrated that 4 ounces of alcohol used in 24 hours will increase the hearts action from 100,000 to 112,226; if the quantity is increased to 6 ounces, 17,388 extra beats will be made; and if half a pint is used, 24,000 extra, or 1000 extra beats per hour. This is equal to raising a ton 28 feet extra, after getting it up the 115 feet, or 143 feet. For so small an organ as the heart, to raise a ton 115 feet in 24 hours is as much labor as it should be required to perform.

If the normal condition of the heart's action requires a certain length of time for rest; how much time does it have for rest when it is forced to beat 1000 extra times an hour?

There is four times the expense to a railroad company to run its trains 40 miles an hour, that there is in running them 20; the wear and tear of the vital machinery is no exception to this law.

By the use of an alcoholic stimulant the vital machinery is made to run too fast, and therefore as soon as it is expended the vital forces

will be proportionately weakened; this explains why depression follows stimulation.

The more the whip is used on a team the sooner it becomes exhausted; the more the stimulant is used the sooner the vital force will break down. Good food, fresh air, a plenty of sunlight, and pure water keep the vital machinery in normal condition; and are not stimulants to urge us on to over exertion at the expense of that beautiful balance in vital action that constitutes health. The International Medical Congress which met in Philadelphia in 1876, at which over 600 delegates were present from this country and Europe, adopted a report in which "alcohol was declared to have no food value, and to be so injurious in its effect on the human organism as to leave a grave doubt as to whether even as a medicine it did not do more harm than good."

Pres. Huntsman further says: "It is settled by medical science that the gastric juice has no effect on alcohol, and hence it is indigestible."

"It is a foreign substance in the blood, retarding the circulation. It draws the water and albumen from the blood corpuscles, and only tends to disorganize the system."

While this is true of every other part of the tissues, it is almost emphatically so of the brain and nervous system. The mind is the grand object for which the body lives and for which a portion of itself is being continually immolated; whatever interferes with this "daily sacrifice" is sacrilege.

The nerves and the brain are mostly albumen, alcohol coagulates and hardens these, so that they are variably paralyzed; the circulation of the blood is retarded, thereby increasing the heart's action. The capillaries are congested, and the countenance bears the seal of the destroyer that is apparent to every casual observer. By it the very structure of the brain and the finer sensibilities of the soul become hardened.

Ether, chloroform and nitrous-oxide gas are so poisonous that a small quantity taken into the blood by inhalation, paralyzes the sensibilities of the brain and nervous system thus producing unconsciousness; a similar "diminution of sensibility or anesthesia is developed in direct ratio to the quantity of the alcohol taken, as may be seen in all stages from simple exemption from all fatigue, pain, and idea of weight exhibited by ease, buoyancy, hilarity, to that of complete unconsciousness and loss of muscular power. It is this anesthetic effect of alcohol that has led to all the popular errors and contradictory uses which have proved so destructive to human health and happiness."—(Dr. W. S. Davis.)

Verily, "Wine is a mocker," the victim is deceived, his best friend is considered an enemy; and may be murdered on account of the delusion; the wife of his youth is forgotten and left to starve; his children to suffer with cold and hunger; the once happy home has long since passed to the possession of his more thrifty neighbor; his patrimony is wasted for that which is not bread, and the accumulated earnings of years of hard toil and economy, for that which does not satisfy. His language is senseless gibberish; profane and obscene words are the utterances of the half-paralyzed tongue.

The half-developed thoughts are reiterated as though they were pure eloquence.

Language is too feeble to paint the extent of the fall and degradation of some of the finest intellects of earth, and all from the effects of alcohol.

Verily, at the beginning it is a mocker—a deceiver; its end, the bite of a serpent and the sting of an adder. As alcohol in its relationship to animal life is antagonistic to every physiological action, how can we expect to violate these laws of our being and be in condition to enjoy the happiness and usefulness which is commensurable with God's gifts to man?

Scientific teachings are in harmony with Scripture in that "Wine is a mocker, strong drink is raging, and whosoever is deceived thereby is not wise."

GUTTA-PERCHA.

DR. H. C. MERIAM, OF HARVARD UNIVERSITY.

Gutta-percha is the product of the Inosandra gutta, a tree found throughout the southern part of the East Indies and the large islands of the Asiatic Archipelago. This tree is often over seventy feet in height. The juice can be seen in lines under the bark. This material was first introduced by Dr. Montgomery, in 1842. During his walks he noticed a Malay laborer in the fields working with a hoe the handle of which attracted his attention. He learned that it was made from the juice of a tree; that it could be molded when hot to any desirable form, and was used for making canes, handles for whips, etc. He introduced it into England, where it was at once made use of. A lot had been sent there some years previous, but had not been understood.

Rubber, a similar material, was discovered in 1735. The celebrated chemist, Dr. Priestly, called attention to its use for erasing lead-pencil marks in 1770. It is derived from a much larger range of plants,—among others, some species of the fig-tree. It is claimed by some that rubber is contained in all plants that have a milky juice. Milkweed contains about four per cent of rubber. A rubber has been made from linseed oil.

Birch bark boiled for a long time gives a material that responds to all the tests for gutta-percha, and it is curious to note that pure gutta-percha that has been sheeted resembles strongly birch-bark. The juice of both rubber and gutta-percha is a milky fluid, but that of gutta-percha, unlike rubber, coagulates when exposed to the air, like blood, and it may be skimmed off and kneaded. The trees were first cut down to collect the juice; more than 300,000 were sacrificed before the waste was stopped. Now the trees are planted and tapped, and the gutta-percha formed into large, longish lumps like small hams. It is at times formed by the natives into odd forms of beasts, birds and reptiles. As found, it is often adulterated, but owing to advanced knowledge, pure gutta-percha can be more readily obtained than formerly. We have to distinguish between two forms of adulteration: those used for fraud in weight—foreign substances such as small stones, sand, and pieces of bark; and, second, those that combine with it injure its strength,—pitch, tar, etc. But, strange to say, none of these latter interfere with its hardness when cold. This last adulteration the dentist has to guard against, and therefore to test its strength it should be slightly warmed. The two best grades are known to the trade as "G. P. A." and "G. P. F." The G. P. A. is of a light-brown color, and the G. P. F. when sheeted is a beautiful marbled white.

There was an article introduced by the Chinese the use of which was unknown for a long time, but it was finally discovered that it was used entirely for the adulteration of gutta-percha, and that is now guarded against. Crude balatta much resembles gutta-percha, but when sheeted the difference and its inferiority appear. Gutta-percha is pliable at 77 and 86 degrees F., soft at 112, melts at 248, and is decomposed beyond this point. It enters extensively into the arts. It has made submarine telegraphy possible. A piece of cable covered with gutta-percha which had been submerged for more than fourteen years was found to be in perfect preservation. It is also used for hose for conducting hydrochloric acid, for the lining of tanks in which it is transported, and for lining tanks in which glass is etched. It constitutes the principal cement used in the shoe-shops when dissolved in bisulphide of carbon. There is also an elastic cement for cementing the soles of shoes, of which it forms a part. It enters into the manufacture of artificial leather for the linings of shoes. It is soluble in all things that dissolve rubber, essential oils softening and dissolving it under heat, and completely soluble in chloroform. Cables buried near the roots of oak-trees are often attacked by a fungus, and in parts of Kent, Wales, and near Dublin, by a small insect. It possesses a very strong fiber, and one which, unlike rubber, is elastic only in one

direction. This is taken advantage of, and in no case is it made so as to destroy this fiber. As evidence of its strength, a hose one-eighth of an inch thick and one-quarter of an inch bore was tested at 387 pounds, at Birmingham England, the utmost pressure of the pump, without affecting it in the least; and it has been subjected to a pressure of a height of 450 feet without injury. The same pressure in a leather hose sent the rivets flying in all directions.

The gutta-percha is prepared from these large lumps or hams, cut into pieces, heated in hot water, kneaded, and torn apart by a machine called a tear-wolf; rolled between rollers revolving at unequal speed, so that the material is not only rolled but stretched. You will notice, in the laboratory gutta-percha, that it retains this stretching till set free by heat, and that immediately on being warmed the piece will contract.

Gutta-percha has a tendency after a time to go back to a rosin unless protected from air and light, and experiments have determined that it is best presrved in water. In a series of experiments undertaken by Miller, "a sheet of gutta-percha was exposed for eight months under the following conditions: First, in a netting open to the air and light, but excluded from the rain. Second, in a bottle open to the air and light, but excluded from the rain. Third, in a bottle open to the air, but excluded from the light. Fourth, in fresh water open to the air and light. Fifth, in fresh water open to the air, but excluded from the light. Sixth, in fresh water excluded from air and light. Seventh, in sea-water exposed to air and light. Eighth, in sea-water excluded from light, but exposed to air. Ninth, in sea-water excluded from light and air. Specimens Nos. 4, 5, 6, 7, 8 and 9 were hardly altered, and with the exception of a slight increase in weight, caused by the absorption of water which they lost after exposure to air for two hours, they did not appear to have undergone any change. No. 2, which had been kept in a bottle, the mouth of which was open had absorbed 5 per cent of oxygen, 55 per cent being converted into resin; the inner portions, screened from the light by the outer folds, were but slightly altered in texture. No. 3 had undergone but little change, having increased in weight but 5 per cent, and yielded to alcohol only 7.4 per cent of resinous substance. Another sample, which had been exposed to the light two months, had become quite appreciably increased in weight,—5 per cent—and yielded 21.5 per cent of resinous substance to alcohol; while a piece of the same sheet kept in the dark had undergone no sensible change. Pieces of cable which had been submerged for periods varying from a few weeks to seven years were examined, and in no case where the cable had

been completely and continuously submerged was any sensible deterioration in the quality of the gutta-percha found." There has been exposed to air in my office a sheet now brittle, which was soft and pliable a year ago.

As gutta-percha varies so much with age and in different qualities, the difficulty of giving any fixed proportions for dental purposes is obvious. Different qualities will, of course, require different proportions to bring them to the firmness required. For this reason I prefer to start with pure gutta-percha, working in about six parts of foreign substance; then testing and working from there onward. We must remember that no strength is added by our material. We may add hard materials, but that does not indicate toughness. In a diamond ring, though you may mark on a window-pane with the diamond, yet it will not bear greater strain than its setting. For this reason sharp substances—silex, pumice, and the like—I consider unfitted for use with gutta-percha.

A great many varieties of substances have been recommended for this purpose, chalk, quick-lime, oxide of tin, oxide of zinc, and the various forms of mineral earths, talc, etc.

For a dark-colored stopping I should use G. P. A., the best grade known to commerce, and for the light G. P. F. They may be mixed for a medium. For convenience they had best be bought sheeted, keeping in mind that the different forms in which it is offered do not indicate different varieties. The gutta-percha should always be fresh, and feel soft and unctuous in handling.

Here, again, I would speak of the toughness of the fiber and the advantages derived from the use of pure gutta-percha. The splint gutta-percha, often called pure, which is occasionally recommended, is adulterated with tar or rosin, and you can readily see that such adulteration must injure its fiber, and that the addition of any of the foregoing substances could not overcome that original defect.

Many of the early gutta-perchas introduced for the use of dentists were made by dissolving in chloroform and stirring in the hardening materials.

The first step in the process of making is to send a one-layer resin-box to a foundry and have a casting made. This iron is heated and covered with the oxide of zinc; then the gutta-percha is cut into pieces of the size of the iron, and laid sheet upon sheet with the oxide of zinc between each. The pile is then lifted to the iron and rolled out with the common rolling pin; also kept well covered with the oxide. Pure gutta-percha can be obtained by dissolving in chloroform, drawing off with a syphon, and then distilling off the chloroform, or dissolving in bisulphide of carbon and filtering through animal charcoal.

These methods need not be used to-day, as G. P. F. sheeted will be found white enough for all purposes. It is a good plan to keep the iron covered with an old towel well loaded with oxide of zinc, and to roll the gutta-percha between its folds.—*Cosmos.*

For Lining Rubber Plates with Gold, Dr. Hamlin Barnes makes the following suggestions: It is important that the surface of the cast be perfectly smooth and free from air bubbles. To obtain the result the impression should be given several coats sandarach varnish. Where impression is taken in modeling compound, the varnishing should be done quickly to prevent alcohol from softening the surface. In preparing plaster for cast, place sufficient water in the bowl and sift the plaster a little at a time into it, allowing it to settle after each addition. After sufficient plaster has thus been added and allowed to settle, the surplus water should be poured off and the thin batter poured into the impression till the face of it is covered; this is jarred to cause it to flow into the depressions, after which batter of a greater consistency is added to desired thickness.

The case is flasked and packed in the usual way; to prevent the rubber adhering to the cast, it is covered with an alloy of lead and cadmium rolled to about No. 40, and to facilitate opening the flask, during the process of packing, a piece of thin muslin is placed between the rubber and the cast; this is removed before the flask is finally closed. and when in the usual method of procedure it would be ready to be placed in the vulcanizer, the muslin having been removed from the lead foil still remaining in position, it is allowed to cool, preferably in the air, but if time is an object, by immersing in cold water. When quite cold the flask is opened, the lead foil stript off, any surplus rubber cut away with a pair of scissors, and the prepared gold applied, either to the surface of the rubber or to the cast. In either case it is cut into pieces of suitable size and shape to fit neatly, allowing the edges barely to lap; if the pieces lap too much the edges are liable to rise after the case has been worn, and thus form a rough line; the gold is "patted" into close contact with the rubber, and after the surface is entirely covered the flask is closed and the case vulcanized. As the gold is a trifle thinner than the lead foil, it is better not to quite close the flask till the gold is placed in position. Particular stress is laid on allowing the flask and its contents to cool before opening to insert the gold. If the flask is opened immediately, there is a tendency in the rubber to draw away from the mold. From this cause, when the flask is again closed, the position of the gold is likely to be changed, the joints between the pieces may be opened, it may be thrown into folds, or even torn over depressions.—*Western Den. Journal.*

ANTISEPTICS AND DISINFECTANTS.

DR. A. W. HARLAND, CHICAGO.

In American Dental Association.

What are the conditions in oral surgery or the practice of dentistry calling for the use of disinfectants? Before indicating these conditions, it may appear better to define antiseptics and disinfectants. What is an antiseptic? An agent which will prevent decay, which will arrest it when once begun, in fact, preserve,—opposed to putrefaction. It need not be a disinfectant; it ought to be a microbicide. What is a disinfectant? An agent which will destroy foul odors by combining with them chemically; which will not coagulate the surface and leave the interior to putresce, but will cleanse and purify, and destroy infection. What are the conditions requiring the use of disinfectants? Before beginning an operation the hands, instruments, rubber dam, and all appliances used by the surgeon must be disinfected. Disinfectants are indicated in the treatment of engorged antra, in the roots of teeth or around them, in carious or necrosed bone, on the buccal, pharyngeal, and laryngeal mucous membrane; in fact, wherever a foul odor, infectious material, or decomposed matter is found, it is your duty to disinfect, destroy, remove, and purify. Cavities in living teeth need to be disinfected for the same reason that we disinfect a pocket in the gum, or an abscess at the apex of a root, because at these points will be found in nearly all cases a nest of germs. These minute organisms and their spores are found in teeth with and without living pulps, around the roots of the teeth, in the antrum, on the tongue, along the whole alimentary tract, including the oral cavity, and in the air, ever ready to seek a lodgment for propagating their species. They must be destroyed. Many antiseptics will not destroy germs without causing injury to living tissues. Others will not destroy spores, hence the necessity for using sporicides, microbicides, germicides, and disinfectants. In bacterio-therapy of dental surgery such disinfectants as are least obnoxious to taste or smell and least injurious to instruments, if equally potent, are to be preferred. Those drugs which are escharotic —though disinfectant—or poisonous in small quantities must give way to remedies which are palatable and free from disagreeable fumes or stains. We now have a long list which will fulfill all these conditions. This paper deals with antiseptics and disinfectants from the standpoint of daily surgical practice, and only those remedies or drugs or methods are considered which can be utilized by the surgeon.

In choosing an antiseptic the effect sought to be obtained by its use should be the governing thought. If you wish to seal a cavity in a tooth containing a living pulp you ought not to use alcohol, permanganate of potassium, or Burnett's disinfecting liquid to moisten the

pellet of cotton which you introduce, but you should use carbolic acid, aseptol, creosote, tereben, resorcin, iodol, iodoform, beta-naphthol, engenol, pheno-resorcin, eucalyptol, sanitas oil, hydronaphthol, thymol, myrtol, menthol, boro-glyceride, or other antiseptic agents. If you wish to disinfect a foul root or its contents you would use Labarraque's solution, Condy's fluid, aqueous solution of chloride of zinc, sanitas fluid No. 1, peroxide of hydrogen, solutions of aluminium acetate of chloride, carbon disulphide, corrosive sublimate, biniodide of mercury, hypochlorite of calcium or sodium, iodine, resorcin, trichlorphenol, boracic or benzoic acid, or disinfectants which would permeate the whole mass of putrid matter and not coagulate the surface or substitute the odor of the drug for that which it was desired to disinfect. The object of chemical disinfection in dental surgery is, first to remove foul odors; second, to destroy the agents of infection and disease in the parts to which the drug is applied; after which, if it is not germicidal, apply a germicide which will destroy the germs of putrefaction; third, dress the part antiseptically; exclude floating particles of the air, the dèbris of food and saliva, and nature will do the rest. Antiseptics which are very volatile cannot be used for dressing roots of teeth or wounds of the mouth or jaws. They should not be irritating or easily absorbed into the circulation, especially if toxic. Disinfectants which are disagreeable by their fumes, odors, or stains should be tabooed, as they are unnecessary. Bromine, silver nitrite, chlorine, and sulphur are such drugs. In order to destroy disease-germs or the germs of putrefaction it is necessary to use agents which will not only overwhelm them in their habitat, but which will prevent the development of their spores when removed from the field of observation and transferred to nutrient media. This is important, from the observed fact that some germs have been submerged in absolute alcohol, solutions of zinc chloride, five per cent solutions of carbolic acid, and to extremes of heat and cold, and yet have lived and fructified when restored to favorable surroundings. The micrococci of pus are, for instance, destroyed by aqueous solution of sulphuric acid in proportion of one part to sixteen hundred, while bacteria require a solution four times as powerful for their destruction. Some disinfectants act by virtue of their power to precipitate organic matters, thereby destroying the aliment of certain micro-organisms, which are hence starved to death. In disinfection it must be remembered that all infectious materials are not foul-smelling. The absence of odor, therefore, is not a sure test of complete disinfection. The prevalent belief, however, is in favor of such a supposition. The mere fact of a drug substituting its own odor is not always evidence of disinfection unless experiments have so proved it. Many of the so-called commercial antiseptics and

disinfectants have recently been submitted to crucial tests, and have come out in very bad shape. "In testing the various commercial disinfectants, Dr. Duggan, working with Dr. Geo. M. Sternberg, using broken-down beef tea containing spores of bacillus subtilus and bacillus anthracis, obtained the following interesting table of results:

	Per cent in which Active.	Per cent in which Failed.
Little's soluble phenyl	2	1
Labarraque's solution	7	5
Liquor zinci chloridi (Squibb's)	10	7
Feuchtwanger's disinfecant	10	8
Phénol sodique	15	10
Platt's chlorides	20	15
Girondin disinfectant	25	15
Williamson's sanitary fluid	25	20
Bromo-chloralum	25	20
Blackman's disinfectant	30	20
Squibb's solution of impure carbolic acid (about 2¼ per cent.)	..	30
Burchard's disinfectant	..	50
Listerine	..	50

Frittering away Valuable Time in Societies.—In his annual address before the last Am. Den. Asso., Dr. Barrett said:

We have had too much of business brought before the society and have too earnestly and long debated parliamentary law and questions of order. The overriding of a by-law is a small matter if it will further the scientific ends of the organization. By-laws are supposed to be intended to further the objects of the society, but when they manifestly stand in the way of compassing a desirable end, they should give way. I am not advocating the abrogation of law nor the willful infraction of wholesome regulations, but I do not think it well to fritter away valuable time over an unimportant regulation when in manifestly stands in the way of reaching the will of the members.

The use of medicines should be reduced to the smallest number possible to secure the desired results. It is better to enter on the practice of Dentistry with a few medicines—such as have been tested by a long experience of the Dental Profession—than to try many new medicines with doubtful knowledge of their effects.—*Ingersoll's Dental Science.*

Cocaine in Nasal Polypus.—A physician writes to the MEDICAL WORLD that an injection of 4 per cent. solution of cocaine is admirable in polypus. "I injected," he says, "every other day 15 ♏ sol. After the sixth injection I discontinued. In twenty days the polypus had entirely disappeared."

GUTTA-PERCHA AS A FILLING.

DR. H. C. MERIAM, HARVARD UNIVERSITY.

I cannot tell you anything of the desirability of gutta-percha. Each of us has had experience of failures and successes, but the opinions of those who use gutta-percha as a temporary or permanent filling may be stated to be that, for the sake of the condition of the tooth filled with it, they submit to the annoyance of renewals. I have all the admiration for fine work that any one can have, and do not recommend this to take the place of it where the work can in any way be made permanent.

But to fill, as I have known, the tooth of a rapidly-growing blonde child with cohesive gold, consuming many hours in the operation, does not seem to me the work of a dental physician.

I have never directed the cutting off of portions of the gutta-percha fillings, but the pressing of them firmly into the cavity, using the sharp edge of the cavity to cut off the surplus; and I have not met with the shrinkage of which other operators speak.

Fitting crowns by impression I have already given to the profession in the August *Dental Cosmos*. Its use in fitting by impression is of importance in treating cavities difficult of access. A small piece of gutta-pereha is softened by heat, and pressed into the cavity after excavation without drying. This gives the impression of the cavity; remove, and trim even with the outline of the cavity. This is then dipped in the oil of cajeput, heated, the cavity dried, and the gutta-percha carried to place and pressed home. The same method can be employed in cavities on the lingual side of the lower third molar, or in cases so far below the gum that complete dryness is impossible. The pressing in of the gutta-percha, coated with this soft mass, carries with it the moisture of the cavity, and we get adhesion under water.

—*Cosmos.*

The Homeopathic Medical Society, of the County of Philadelphia, adopted resolutions last evening, declaring "that we, as physicians, who are, or should be, conservators of the public health, are fully persuaded that alcoholic beverages are the most potent and destructive to human life and health of any other known source, including war, pestilence and famine. We, therefore, feel it to be our duty to enter our most solemn protest against the saloon and its work."

Quoting from Others.—Ruskin says: "I have always thought that more true force of persuasion might be obtained by rightly choosing and arranging what others have said, than by painfully saying it again in one's own way."

IS THE TENDENCY OF THE SHAPE OF AN AMALGAM FILLING TO A SPHERE?

I read the above in ITEMS, April, page 185.

I answer yes, if the amalgam is of silver, or tin alone. But an amalgam composed of 50 parts silver, 50 parts tin, 5 parts antimony and 5 parts copper, will not *ball* if packed without moisture.

I have glass tubes ¼ inch diameter, in which are trial plugs, made six years ago, that show no signs of *balling*, even by the closest tests.

Their surfaces are still level with the edges of the tubes. Placed in red ink, or aniline in alcohol, no sign of leakage is shown.

So simple a question is easily settled by experiment.

HENRY S. CHASE, St. Louis.

Sore Mouths from Plates.—Dr. C. H. Land, of Detroit, says: If the patient will take an ordinary tooth-brush, and brush the mouth twice a day, it is not important whether the plate is of rubber or gold or platinum, the friction will cure the disease. It has been my experience repeatedly, and I have patients wearing rubber plates with as much comfort as any other dentures. There need be no further argument about it. That is the remedy. If there is indication of sore mouth, remove the denture, whether of rubber or gold, and allow it to remain out of the mouth for a few days, and the mucous membrane will invariably be cured, because the action of the tongue and the air will restore it to its normal condition. It is the absence of the usual friction of the food, the tongue, and the absence of the air that causes the mouth to become tender.

Very Hard Steel.—Dr. H. C. Meriam, of Salem, Mass., exhibited at a recent meeting of the First District Society of N. Y., some Musheer steel, which is a very remarkable article. The doctor first made the steel red-hot and then let it cool gradually. Doing this to any other kind of steel would soften it, but this steel will not soften in the least; it was just as hard as glass, even harder than ordinary hardened steel. The doctor had some porcelain teeth there which had been drilled out by means of a diamond, and the holes were reamed out and made larger by means of a piece of this steel. The steel is made by a new process, and cannot be made soft, and will never become soft.

N. S. Davis, M. D., of Chicago, in an active and successful medical practice of over fifty years, has never prescribed the use of any kind of alcoholic liquor.

PERSONALITIES.

Keep clear of personalities in general conversation. Talk of things, objects, thoughts. The smallest minds occupy themselves with personalities. Personalities must sometimes be talked, because we have to learn and find out men's characteristics for legitimate objects; but it is to be with confidential persons. Do not needlessly report ill of others. There are times when we are compelled to say, "I do not think Bouncer is a true and honest man;" but when there is no need to express an opinion, let poor Bouncer swagger away. Others will take his measure, no doubt, and save you the trouble of analyzing him and instructing them. And as far as possible dwell on the good side of human beings. There are family boards where a constant process of depreciating, assigning motives and cutting up of character goes forward. They are not pleasant places. One who is healthy does not wish to dine at a dissecting table. There is evil enough in man, God knows; but it is not the mission of every young man or woman to detail and report it all. Keep the atmosphere as pure as possible and fragrant with gentleness and charity.—*Dr. John Hall.*

Abuses of Bar and Bridge-work.—It is a healthy and refreshing experience to read in a leading American Dental serial the following call to "halt and reconnoitre:"—"In the name of those operators who have used, are using, and still hope to use bars and bridges to a reasonable extent in their practice, let me protest against the abuse of those devices. When we have one soberly advising the use of a bar in the back of the mouth carrying three or four teeth, and supported at the anterior end only, and when one of the fathers of the profession declares before the American Dental Association that 'if there is a tissue that will bear almost unlimited abuse it is the pericementum,' I think it time to cry a halt."

In the hands of an intelligent man bridge work is the *ne plus ultra* of anything in the shape of supplying artificial dentures to the mouth.—W. H. Atkinson.

As to the Modes of Causation of Disease by Bacteria, whether the result of their presence or of the soluble ferments secreted by them, the writer will express no positive opinion, though it is believed that bacteria by their presence do no harm other than feeding on the tissues destroyed by the ferment secreted —A. W. HARLAN.

Permanganate of potassa is obtained by the action of manganet acid on caustic potash, and is used in solution of from 5 to 20 parts to 100 of water.

INFLAMMATION OF THE DENTINE.

DR. L. C. INGERSOLL, KEOKUK, IOWA.

Do the terms inflamed dentine and sensitive dentine mean the same thing? That which I understand as sensitive dentine is emphatically inflamed dentine; and there is such a thing as inflammation of the hard tissues, not excepting the dentine. The objection raised to that statement of the case is this: Inflammation implies vascular action. Is there any vascular action in dentine? I have been in the habit of viewing the subject in this manner: It is not necessary that a tissue manifest every process of inflammation before it may be said to be inflamed. We may have some manifestations of inflammation in one tissue which do not appear in another. All are not equally vascular. We know there is such a thing as inflammation of cartilage, yet that is not a vascular tissue. It borrows its vascular supply from the surrounding tissues, and its pathological conditions also. It has been suggested that the blood-corpuscles cannot enter the tubules of the dentine, and therefore there can be no such thing as inflammation of the dentine; but the entrance of blood-corpuscles is not necessary to inflammation. Is there a circulation in the dentine? That is the question. We must all say yes; there is nutrition, therefore there must be circulation, and an activity in promoting it, allied to vascular action. Now, concerning sensation. The dentine is not *peculiarly* sensitive,—that is, it is not in a pathological condition till it becomes inflamed; nor is the pulp itself. I see no impropriety, therefore, in speaking of inflamed dentine. In dental science we have discovered that neither in structure nor in chemical constituents is tooth-substance *bone*. There is no anatomist to-day that recognizes cementum even as perfectly identical with bone. Hence we call it *cementum*. The phraseology which Dr. Abbott uses is hyperostosis. Why not call it excementosis, dropping the syllable *os* as pertaining distinctly to bone-structure? Then we shall have a nomenclature of our own in harmony with dental science, and which would distinguish an excessive deposit of calcareous substance on cementum from a calcareous deposit on normal bone. One word with reference to the nature of this deposit. Is it proper to speak of it as hypertrophy? Has it the characteristics of hypertrophy, or of tumefaction, which? I look on it rather as a tumefaction than a hypertrophy. We may have such a thing as hypertrophy of the cementum, but it is physiological and not pathological. Physiological hypertrophy is the result of excessive *excitation*. Excementosis is pathological, and results from *irritation*. All the functions of the body are set into operation by normal *excitants*, but not by *irritants*, and yet a normal excitant may become an irritant by being excessive.

All teeth do not have the same thickness of cementum. There is

a great variation in that respect, depending on the degree of normal excitation of the organs. Teeth that are used thoroughly in mastication will very likely be found to have thicker cementum on their roots than teeth that are not thus used. Such teeth may have physiological hypertrophy, not pathological excementosis. One is a healthy condition, and the other unhealthy. If we accept the theory of inflammatory action in dentine, it furnishes to my mind another factor in the process of dental decay. The processes of nutrition are similar throughout the entire body. So are the processes of inflammation and of destruction.

The dentine and the bone are constructed on much the same plan, the only difference being that one is a tubular structure and the other a cancellated structure. If we study inflammation in the bone, we will find that the medullary portion is that part in which are developed the active processes of inflammation. The expansion of the tissue under inflammation takes place at the expense of the walls of the cancelli; thus we have the *softening process* of bone. We may have precisely the same thing in the dentine; namely, the expansion of the dental fibrils at the expense of the intervening hard tissue, resulting in what we call demineralization. So that we do not get an explanation of the *whole* of the process of decay through either the germ theory or the acid theory. We need the inflammatory theory before we have the whole, operating, as I have observed, in the demineralization of dentine.

Irritation is as much inflammation as suppuration, because it is one of the processes. Inflammation is not a simple condition, but a series of progressive and changing processes, going on from irritation to death; and one is just as much inflammation as the other, only we define each stage by a different term,—thus we have irritation, hyperemia, congestion, induration, suppuration, etc., each designating a particular stage in the progress of inflammation. Before there can be a lesion anywhere there must first be irritation, or an *injury*, as the English call it. That is the first stage in the inflammatory processes, or is one of the stages of inflammation. When the surgeon says there is no inflammation in a wound healing by first intention, he means that there is no suppuration, or none of the usual manifestations that follow an injury.

Healing by first intention is healing without loss of tissue. Healing by second intention is healing with loss of tissue and the reorganization of new tissue, the cicatricial tissue, to restore the loss. Inflammation, therefore, may be present without all the symptoms usually ascribed to it.—*Am. Den. Association.*

MY METHOD OF BRIDGE-WORK.

DR. H. W. RUNYAN, EATON, OHIO.

There is no doubt that bridge-work is very valuable in many instances, for partial dentures. But the great cost of the gold process places it within reach of comparatively few, while there are fewer practitioners of dentistry that thoroughly understand the swaging and soldering of gold that is necessary in the construction of the gold bridge-work. The method here described will place it within the reach of all who can afford a plate of any kind, and it can be constructed by any one capable of making a vulcanite plate, and I think it will last as long as any bridge-work, or as long as the roots, to which it is attached, will last.

Process of construction, where the four incisors are missing and the cuspid roots remain:

After cutting the cuspids down to or a little above the margin of the gum, prepare by drilling out the canal with an inverted cone bur, and then a pointed fissure bur. By so doing a perfect funnel shaped canal is formed, which gives strength to the work, and facilitates access to the end of the root. Take a platinum bar long enough to reach from one root to the other, and bend at right angles to form the pins. Now set the bridge support in place, after bending to conform with the gums; and take the impression and articulation. Make the model, place on the articulator and wax on vulcanite teeth. Remove from the articulator, flask and vulcanize, after covering all the rubber with vulcanizable gold.

Gum teeth can be used for the bridge between the roots, if the alveolar process has been absorbed very much.

After vulcanizing, clean up and fasten in by placing a little cement on the pin that extends into the cavity formed by the fissure drill. The rubber will fill that part formed by the inverted cone.

Use the best rubber, run the vulcanizer up slowly to 300° Fah. and vulcanize for one hour and fifteen minutes. You will have "a thing of beauty, and a joy" to your patient and yourself.—*Ohio Journal.*

Oil to Moisten Finishing Burs when cutting down the excess of gold fillings is good. Dr. Mitchell states that glycerin is much more effective, and that it is more agreeable to the patient, and that burs do not clog as they will when oil is used.—*Dental Review.*

The white and the dark meat in birds.—The voluntary muscles, which are most constant exercise, constitute the dark meat, and the involuntary muscles the white meat.

HOW WE GROW.

We are taught by physiologists that there is a constant splitting up of the molecules of which the body is composed. This breaking up is accompanied in health by corresponding building of tissues from the food after assimilation. For instance, the bones lose their phosphate of lime to which they owe their solidity, the salt passes into the blood, and is there eliminated by the kidneys. The brain also loses phosphorus. Now, the food should, if appropriate and duly assimilated, supply an abundance of the phosphites,—ample, indeed, to bear the strain imposed on the phosphorus resources of the body. But this supply being insufficient, or digestion or assimilation being imperfect as regards the phosphorus salts, a phosphorus famine begins and the body feeds on itself and consumes its own phosphorus. So a general malnutrition may react on any specified part of the organism by abducting its constituent salts, albumen, and other substances, and thereby lessen its resistive power to disease; and the teeth are organs peculiarly liable to suffer from this general malnutrition, inducing a chronic starvation, and by lowering their vitality and robbing them of much of this reserve store of materials render them more liable to caries.—Ed. *British Jour. of Dental Science.*

The Dentine and Enamel. Dentine seems to be much the same tissue as bone in regard to its chemical elements, but is very different in its morphology. It is formed in a protoplasmic matrix of great vascularity by the reduction of the supplied lime-salts in globules formed in successive capsules, which are pierced by the fibrils, around which permanent tubes are formed. Spaces are sometimes isolated by the aggregation of globules, and in these there is often nothing but protoplasmic elements, but as a rule these interglobular spaces are filled solid by calcification. This form of calcific globules can be imitated experimentally by precipitating lime carbonate in any viscous fluid, but especially in fluid albumen, which is most like animal matrix. On the periphery of the dentine we find irregular granulations and spaces also, as the foundation for the more regular forms of precipitation. Throughout the whole tissue the protoplasmic elements persist as the living organic matrix which, by connection with the mains, the contents of the tubuli of the dentine, the fibrilles, which are in their turn the persistent protoplasm, conveys nutrition into the tissue and waste from it, and incidentally conveys sensation to the pulp.

The enamel is formed in a manner analogous to that of dentine but yet dissimilar in detail, as the tissues are dissimilar in chemical composition as well as in morphology. Enamel is a calcified epithelium, or at least it is formed in a protoplasmic sub-basis, which is the

result of a metamorphosis of epithelium. This basis is embryonic protoplasm, and within its substance is formed the tissue which is to be the inclosing capsule of the crown of the tooth when thrust beyond the gums. The salts of lime are deposited and arranged in a specified manner, according to the transmitted impulse, and in an organic matrix of horny matter,—*keratine*. It appears that there are areas of living-substance throughout this tissue,—perhaps, indeed, a reticulum of protoplasm penetrating the substance of the prisms themselves,—but at least so far as it is living-substance it contains protoplasm, and this conveys nutrition. Through this the enamel is nourished, however limited and minute this and the corresponding removal of waste may be; the main fact being that nutrition and waste are exchanged within the tissue to some extent by means of the connection of the living substance of the dentine with the periphery of this tissue.—*A. H. Thompson.*

Metamorphosis.—The older physiologists assumed that the flesh of the meal was directly, without great effort, and without much change, so far as the chemical composition is concerned, transformed into the muscle of the eater. The researches of modern times, however, go to show that the substances taken as food undergo many changes and suffer profound disruption before they actually become part and parcel of the living body; and conversely, that the constructive powers of the animal body were grossly underrated by the earlier investigators. If we were to put forward the claim that the protein of the meal becomes reduced almost to its elements before it undergoes synthesis into the superficially similar protein of muscle, the energy set free in the *de*struction being utilized in the subsequent work of *con*struction, we would not anticipate modern research but a brief time, for it would almost seem as if the qualities of each particle of living protoplasm were of such individual character that it had to be built fresh almost from the beginning. The problems of physiology in the future will be largely concerned in arriving, by experiment and inference,—by the mind's eye and not by the body's eye alone,—at a knowledge of the molecular construction of this protean protoplasm, of the laws according to which it is built up, and those by which it breaks down; for these laws when ascertained will clear up the mysteries of the protean work which the protoplasm does. All over the body the protoplasm is constantly building itself out of the pabulum supplied by food, and continually breaking down, giving rise to different tissues and combinations in different parts of the body, with different compositions and different properties, the various activities of the body being the outcome of the various properties of the various combinations. If this is true, it inevitably follows that protoplasm cannot be the same everywhere, but

that there must be many varieties with different qualities, and with correspondingly different molecular structure and composition.—*Michael Foster.*

Molecular Metamorphosis is the cause of every act and process of nutrition and removal of waste. Indeed, it is certain that a "wasting of its tissues" *is* wasting,—a removal of integral parts by molecular breaking down, but the expected replacement does not follow. In certain diseases assimilation and molecular construction seem to be held in abeyance, while breaking down and waste still go on, either normal or abnormal, and in other conditions again waste is lessened and construction goes on, with corresponding increase in the quantity or density of the tissue. These operations we observe in the dentine, and perhaps they take place in the enamel. As there is nutrition and waste by osmotic currents in these tissues, there must be molecular change in accordance with general law. The teeth cannot be exceptions to a rule among vital tissues in this regard. There can be waste of the inorganic elements of the dentine and probably of the enamel, and when this removal is not followed by compensating reconstruction of lime phosphate molecules, softening of these tissues results, with corresponding lessening of resistance to the attacks of caries. Then, there may be increase of density, as in old with age, by a more rapid construction than waste. If molecular progression and retrogression are continuous in normality, then is metamorphosis omnipresent in the dental as in all other tissues.—*A. H. Thompson.*

Bleaching Teeth.—After the root has been filled, and the tooth is free from tenderness, apply the dam, dry the cavity, and remove all discolored decay. Wash the cavity several times with fresh peroxide of hydrogen, and place a few crystals of chloride of alumina in the cavity (this may be procured of E. H. Sargent & Co., Chicago), moisten them with peroxide, and wait from three to five minutes; wash the cavity thoroughly with water, then apply a solution of thirty grains of borax to the ounce of water, till the the acid is entirely neutralized. Dry the cavity with hot air, and paint the interior with copal-ether varnish. When it is dry, mix oxychloride of zinc of the desired color, and fill the cavity; allow it to harden, then prepare the cavity for the gold filling, and fill it at once.—*Dental Review.*

It is said that Dr. Evans, the American dentist of Paris, is now the owner of the *Morning News*, the Parisian daily. Dr. Evans also owns the *American Register*, and is thus proprietor of both a weekly and daily organ.

"HOW TO EXTRACT TEETH."

In the most recently published monograph on "Extraction of the teeth" the author laboriously flounders through some of the science and much of the superstition in regard to the operation, but when the position of the operator and patient is described, the climax is capped. He says: "With some patients it may be rather out of place, and of course, with some, absolutely and entirely inadmissible, but it has more than once served a very valuable purpose at a critical moment, for the operator to throw his right leg over the patient's right arm, or both arms at the elbows, and thus hold down the hands, which if thrown up, may strike the operator's hand and cause a fracture of the tooth or jaw, or some other untoward accident."

How long, O Lord, how long is our profession to be bondaged by the vaporings of those who are delegated to write on the science of dentistry? How long are we to be held up to ridicule because those high in authority play the buffoon and gravely occupy pages devoted to surgery of the mouth, with instructions that disgust both the scientific and the refined?—*Western Den. Journal.*

Advertising in connection with dental practice is not a modern innovation, for in an Almanac and Pocket-book, bearing the date 1708, "Made and Compiled for his Country's Benefit by Cardanus Riders," appears the following advertisement:—"Artificial Teeth set in so well, as to eat with them, and not to be discovered from Natural; not to be taken out at Night, as is by some falsly Suggested, but may be worn years together; they are an Ornament to the Mouth, and helps the Speech; also Teeth Cleaned and Drawn by John Watts, Operator, who applys himself wholly to the said Business; he lives in Raquet-Court, in Fleet street."—*Den. Record.*

Preventive Medicine.—Dr. C. R. Illingworth thus writes in the *Medical Press*:

One of our great aims as physicians is to prevent disease; another is to cut short its course when developed. Our power in these directions finds full scope among that class of disorders now generally recognized as depending on the reception, growth, and development in the tissues of micro-organic life. By the continual suppression of the growth and development of these forms of cell life, we may, indeed, hope at length to erase the names of the diseases they cause from the category of those "ills that flesh is heir to." The diseases I refer to are scarlet fever, diphtheria, measels, whooping cough, rheumatic fever, chicken-pox, small-pox, syphilis, hydrophobia, and yellow fever.

The germicide remedy I have found to answer as a specific and prophylactic in such diseases is the biniodide of mercury given in solution of potassic iodide. In all cases of scarlatina or measels occurring in one member of a family, I put the rest on preventive medicine. Thus, for children I prescribe as follows: Bichloride of mercury solution, ℥ iss; iodide of potassium, ℥ j; ammonia-citrate of iron, ℥ j; sirup, ℥ iss; water to eight ounces. One to two teaspoonfuls to be given three times a day.

A CONVENIENT AND CERTAIN MODE FOR TEMPERING STEEL.

Mr. James A. Peck, of Brewsters, N. Y., mechanical engineer of the N. Y. Condensed Milk Co., gives the following method discovered by him, and which he uses with great success for tempering all kinds of tools, knives, razors, steel dies, and other implements.

Take a suitable quantity of muriatic acid, dissolve all the zinc the acid will take.

Prepare a tempering bath composed of one part of the above zinc acid and one part water.

Heat the steel according to its hardness.

If high or hard steel, heat till just red and then temper in the acid bath.

If low steel, heat it as hot as you would to temper in water, then temper in the acid bath.

After immersing in the acid bath, cool off in water.

For lathe and planer tools draw no temper; but for other tools draw temper. Unlike water tempering, the colors that appear under this method give no clew to the hardness.

By this process, steel is readily hardened to any desired degree, and may be made to cut glass like a diamond.

If desired, an acid bath composed of two parts of muriatic acid and one part water may be used. Mr. Peck, however, prefers the zinc acid, as being more dense.

A prominent advantage of this method of tempering is the certainty and excellence of its results. It never fails to yield the temper required. It can be relied on for every description of steel or tool.

From a newspaper clipping sent us by a correspondent in New York, we learn that there are twenty dentists in the metropolis whose annual incomes are $20,000 or more. It is estimated that at least twenty more come between $15,000 and $20,000, and the remaining 700 or 800 gain from $3,000 a year upward. In Chicago there are about 250 dentists, and we should think from what we see and hear that not more than a dozen earn more than $12,000, and of this number three or four may go as high as $18,000. Fifty of the remainder

have incomes of $8,000 to $12,000, and another fifty from $5,000 to $8,000. From $5,000 down to $1,000 per annum will about express the figures for the odd 100 or more. This estimate does not take into account the establishments of advertising dentists, where many persons are employed in the manufacture of cheap plates, and the insertion of vast amounts of plastics.—*Dental Review.*

In Inflammation of the Dentine, we have a molecular activity which seems to be a breaking down and removal of lime salts, then of its organic matrix; and then, in healing, a reconstruction of both occurs. "Inflammation causes solution of the lime-salts, and afterward a liquefaction of basis-substance, both in bone and dentinal substance. The result will be the appearance of globular spaces, a bay-like excavation, which, instead of being filled with basis-substance, exhibits medullary corpuscles, multinuclear protoplasmic masses, corresponding to the embryonal stage of the tissue . . . Suppuration may result, but far more common is the healing process of eburnitis, the results of which may be seen in the formation of dentine closely resembling secondary dentine, or a dentine destitute of canaliculi,—osteo-dentine." (Heitzmann and Bödecker.) What this inflammatory condition is we will not stop to consider, but it will suffice for our purpose to direct attention to the intense molecular activity that takes place, the breaking down and then total removal first of organic and inorganic elements, and then the following of molecular synthesis, by which the basis-substance, as well as the calcified elements, is reproduced. Here is a molecular work which cannot for a moment be doubted, and, while we observe its operations with wonder, we regret that the mystery of its *modus operandi* is yet impenetrable.—*A. H. Thompson, Topeka.*

A Polishing Disk Cutter.—The polishing disks made of sand-paper, etc., can be purchased very cheaply at the dealers, but many dentists have pleasure and pride in making some of their own instruments and materials.

I take a No. 10 (¾ in.) gun-wad punch, and drill a hole up into the center of the shank. In this hole is driven a steel pin, the free extremity sharpened and on a level with the cutting edge of the punch. From a sheet of sand paper, shellacked on the back, can be punched dozens of disks, even on the edges, and perforated in the center ready for mounting.—F. L. D., in *Archives.*

A good antiseptic tooth-powder is made from boric acid 4, potassium chlorate 3, guaiacum resin 2, prepared chalk 6, and magnesium carbonate 33 parts.—*Am. Jour. Pharmacy.*

Ridicule has no part in fraternity. We can only reach the highest grade by treating all earnest men with respect, and by pooling our issues, and not finding fault with new propositions before examining them. If you turn a man round and eye him with suspicion, will you elevate him? But if you give respectful consideration to every earnest and honest effort, it will not be long before you will find there is something in every man that is worthy to be taken hold of and utilized for the general good.—*Atkinson in Cosmos.*

For the destruction of disease-germs or the neutralization of their excretions, antiseptics are not called for, except as after dressings in the care of wounds or other local lesions. This practice is believed to be indicated also in internal medication. This statement needs to be modified only so far as a disinfectant may likewise be an antiseptic.—A. W. HARLAN, Chicago.

The Dentine and Enamel like other tissues, have each been developed from a specially modified protoplasmic matrix, which in its earliest form is nearly pure albumen. With the mysterious impulse imparted to the formative pulps, they intelligently select from the pabulum the organic and inorganic elements required for the proper construction of these tissues, which are so wonderfully elaborated in all their details in accordance with typal commands.—*A. H. Thompson, Topeka.*

Peroxide of Hydrogen is water with the addition of one equivalent of oxygen, united in the nascent state. It is a powerful oxidizer, freely parting with its one extra part of oxygen at the temperature 60°, hence should be kept in close stoppered bottles in a cool place. Tobacco, aconite, and other narcotics restrain its action; contact with platina or gold increases the activity with which its oxygen is liberated, hence it can be applied most effectually with gold or platina instruments.—*Ingersoll's Dental Science.*

"**A full one-half of the young men** who come to Philadelphia to study medicine should be turned face about and sent to a village school. The place to intercept incompetents is at the entrance of the medical schools, rather than at their exit."—*Dr. J. E. Garretson.*

If you are a diamond be sure that you will be found. Cheek, brass, or gall never gets ahead of merit.—*Ex.*

Oh, yes, it does. Many of the most financially and socially successful people in the country have very little "merit" beside "cheek, brass, and gall," more the pity.

For Our Patients.

NEURALGIA.

Simple toothache is not the only form of suffering originating from disease of the teeth; and dentists have some claim to the gratitude of of humanity for allaying many sufferings, as well as the medical fraternity. Perhaps, too, if I can convince you of this, and if you are a sufferer, will give more credit to the advice of your dentist, and think him a more useful and necessary "institution to have round," and that he can afford considerable relief to the human family, besides *simply* "stopping up holes in teeth."

I am not complaining; but I feel a little sarcastic sometimes at the manifest want of appreciation of our profession, when I see what untold suffering and intense agony we are able to relieve even after the "family doctor" has tried long in vain.

How many of you have suffered long with excruciating pain in the face,—perhaps with no pain in the teeth apparently—and had your physician prescribe for you time and again without relief, or only for a brief period, and have been comforted with the assurance that you had the neuralgia, and nothing could be done for you! I know of many such cases—they are not "few nor far between." Many physicians are cognizant of the fact that diseased teeth are often the cause of such pains—and do themselves and us as dentists the honor of heartily recommending their patients so afflicted to us.

I would not have you understand me to say, that all your sufferings are caused by diseased teeth, neither do I assert that *all* the pains and aches that are traceable to the teeth for their cause, rightfully or technically come under the head of *neuralgia.* But as the term is used in so general a sense by the medical profession, as well as by the people, I use it here in the same general way; I do assert that a great many of of them are occasioned by bad teeth, and that of course by proper care of the teeth much suffering will be avoided.

We therefore give this advice:

1st. Have your teeth well taken care of by your dentist. I mean, have them thoroughly treated and put in as healthy a state as possible, and *keep* them so; then your liability to neuralgia or any other disease of the teeth and gums will be much lessened. And here let me say, it is an error to suppose that when your dentist has once put your mouth in order it will stay so for an indefinite period. On the contrary, the mouth ought to be examined by your dentist at *least* twice a year. You should not wait till your teeth begin to ache; "an ounce of prevention is better than a pound of cure."

2d. If neuralgia comes, and you are conscious of any disease of teeth or gums, however slight, or even if a tooth should be tender to pressure or percussion, or sensitive to sudden changes of temperature—for often where there is nothing visible to the eye, such symptoms are conclusive evidence of disease of some sort, and may point to the cause of your trouble—or if you have earache, or pain in the eye, by consulting your dentist, you might get relief, when all the prescribing of your physician does you no good.

I will state a few *facts* from undoubted authority, then you can judge if it is good policy to take *good care* of your teeth. Dr. Fouche, of Philadelphia, relates the following: A lady suffered great pain directly under the "collar-bone" on both sides of the chest. On examination of her mouth, two lower teeth on each side were discovered to be diseased. By irritating them the pains in the chest were greatly increased, and by proper treatment of the teeth, the pains in the chest disappeared. A gentleman who had suffered intense pain in the head and face, and after much unavailing medical treatment, was advised to consult a dentist. A number of diseased teeth and roots were extracted, and the operation was followed by complete cessation of pain.

Another case, from the London *Dental Review*, where the patient had suffered *fourteen years* with dreadful pain in the eye, accompanied by a continual flow of tears and intolerance of light. A diseased tooth was extracted from the upper jaw, on the same side on which the painful eye was situated, when the eye was speedily restored to health.

A patient called at my office only a few weeks since with a dreadful earache of long standing, but toothache had recently been coupled with it, and he wanted the tooth (a lower-wisdom) extracted, as he "couldn't stand both aches at once."

I might gather hundreds of similar cases, were it necessary, but these few facts will convince you, I trust, that neglected teeth may cause a world of trouble.

Let me urge you to attend well to your teeth, then you may be spared some of the other effects of bad teeth — dyspepsia and its dependent ills—as well as the dreadful pains of neuralgia.—*People's Den. Journal.*

Honorable Chauncey M. Depew said in an address recently, that among the companions of his boyhood there were some that as they grew up began drinking socially. To-day not one of them were living; almost every one had gone to a drunkard's grave. And yet there are some druggists that think they ought to have the privilege of filling drunkard's graves, that they may make some money by selling it as medicine.

A Dinner in Central Asia.—The people of Yarkum eat their dinner backward; first fruit and sweets, then meat, and last of all soup.

First a colored tablecloth was spread before them, and melons, pears, grapes, apricots, and nectarines with sugared almonds and biscuits placed on it. Next came the *entree*, consisting of minced meat delicately seasoned, done up in paste and cooked by steam. Then followed the hash or pilaff of boiled mutton and rice with shreaded carrots, the whole bringing up with a basin of thick mutton broth with barley and acid flavoring. The drink during the repast was perpetual cups of black tea.—F. C. Danvere, in *Journal of Reconstructives*.

The Tongue, situated as it is in the floor of the mouth, is surrounded by the teeth. These, if healthy and intact, form a protecting wall to shield it from harm, but if diseased or broken down they become the vertible cause of a variety of diseases of the tongue; and when the tongue is subject to organic disease, it in turn becomes an offence to the teeth and may cause their destruction.—*A. Smith.*

"Some people have no teeth and can't get them, while others who don't want them have them thrust on them," was Smith's remark when a canine tried to take a mouthful of his leg.—*Pittsburg Dispatch.*

One Kind of Comparison.—A young lady giving her experience in a dentist's chair, said it was hardly as agreeable as a box at the opera, but better than being run over by the cars.

"Did you carry that prescription to old Mrs. Smith, last night?" said a doctor to his office boy.

"Yessir."

"Did she take it?"

"Yessir."

"How do you know?"

"Crape on the door this morning."

From germs too small for mortal sight
  Grow all things that are seen;
Their floating particles of light
  Wear Nature's robe of green.
The motes that fill the sunny rays
  Build ocean, earth and sky;
The wondrous orbs that round us blaze,
  Are *motes* to Deity!

Editorial.

THE VALUE OF CORRECT SPEECH.

Many of us who are passable writers are slovenly speakers. It may be we have neglected our manner of conversation so long we do not see its defects, nor the importance of correcting them. At any rate, not many of us have given it thorough and systematic attention. Even if a friend gives us a hint of our failings we are offended. If some one should keep a record of a few day's improprieties of our speech, and then show it to us, we would be astonished; probably we should not believe half of it was possible.

Many are faulty in enunciation. One offends by drawling his words, another by chopping them up; others leave their words and sentences half uttered; and there are those who have such a whining, coarse tone it is difficult to believe the speakers have any refinement.

The sentences of some are as ungrammatical and incoherent in construction as offensive in manner. They seem to have studied grammar only for its use in writing: here it shocks them terribly to see the slightest mistake; but in conversation they are full of errors.

We need but to have our attention drawn to this subject, to see plainly that few have cultured conversational style. They are like a neglected garden where weeds are allowed prominence with useful plants.

Brethren, this ought not so to be, specially with us who belong to a "learned profession." We disgrace our position. Besides, attractive conversational powers is a fine stock in trade; it pays a good dividend. We seriously exhort you to give this subject immediate, persistent, and intelligent attention. Watch yourself closely; thank your friends for the slightest hint tending to correct an error; invite criticism; profit by it though it comes repulsively from an unfriendly source; be determined to improve by all manner of means.

We know a professor of elocution, really a good teacher,—who in conversation speaks so wofully through his nose, hesitates so constantly for words, and drawls them out so disagreeably when they do come, it is painful to listen to him. These defects are not natural; they are simply the result of slip-shod carelessness and long neglect.

We know a young lady of twenty-four years, who, ten years ago, was a sloven and a whiner in every word she spoke. Her tone was so coarse, uncouth and nasal (or rather, as with the professor mentioned, the tone was the opposite to nasal, for those who are said to speak through their nose do not sufficiently use their nostrils) that she was often mimicked by her companions. This girl was seized with the

ambition to become a professional singer. Her parents indulged her, though it was the general opinion that such an attainment would be impossible. She was put under the best music teachers, and is now an attractive, popular singer. Strange that in teaching her full, round, distinct, chest tones, and exceptionally clear, sweet beautiful expression in singing, her voice in conversation should have been left uncultured. But so it was; and now, though she can command good pay as a singer, she is as uncouth as ever in conversation.

Rev. Edward Eggleston, author of several facinating books, is a charming conversationist. His voice has a silvery tone, his enunciation is remarkably precise, and his whole manner in conversation is pleasing; every word is spoken with the utmost distinctness, clearness, and correctness, yet with ease, grace, and naturalness; though he speaks rapidly, his intonation is so rich and varied, and his ideas are clothed with such versatility and beauty, one never tires of listening to him. His very words are pictures, and he makes them smile at every turn.

You say this must be a natural gift. Not always. And though there may be natural defects, it may be acquired. With Mr. Eggleston it was acquired by long, persistent, and very laborious culture. When as a preacher he first came before the public, he was rough-hewn, timid, and awkward of speech. He was so easily embarrassed, and so conscious of the want of culture, he would blush even at the approach of a common friend; he would blunder when to speak the right word would have been much easier. But being conscious of these defects, he was determined to overcome them, and he triumphed gloriously.

It is a trouble; cultivation of any sort is laborious; to become correct and winning in speech means right down hard work. Generally, the more any attainment is worth the more it costs. But if we make a thorough business of any thing, we can generally count on success; not immediately, nor perhaps for a long time, but finally. Correct speech is an accomplishment of such value it will not be dearly bought at a large price.

Right or Left Handedness.—Is there anything in our physiological formation favoring this, or is it accidental? It is certainly difficult to teach a child that is left handed to be right handed, or one that is right handed to become left handed; so difficult that it is generally impossible to entirely change the habit. If you will look at a skeleton you will see one thing peculiar. The bones of the right side are almost always the larger. It is so with the muscles and organs of a living subject. But there are exceptions to this rule. May not these exceptions be the left handed persons, while the rule makes our right handed people?

SCIENCE AND MAN'S ORIGIN.

An eminent scientist has said: "It is the province of science to deal with things material. With the spiritual, especially with the origin of life,—the philosophy of the beginnings of things,—he can have nothing to do, for scientifically he can know nothing of them, he can only take things as he finds them; to go farther is the province of theology."

This position is significant, and is necessary to be kept in view in all discussions of this subject. Scientifically it seems impossible man can come from such an extremely minute and apparently insignificant speck as the germ constituting all there is of his beginning. We sometimes wonder at the smallness of the egg of the little humming bird, but even such a shell full of the embryonic germs of human beings would be enough to people a city. Think of it: man, *the lord of creation*, yet in his beginning such a mere speck that it takes the most cultured eye to discover it, and the best microscope to examine it? Is it not a marvel? Does it not exhibit the apparent inadequacy of means to an end? No wonder science is appalled, and scientists sit by as pigmies. We must remember, too, that infinitesimal as is the human egg, it is not the germ. This is the mass, the comparatively crude mass. The germ within, as with all other eggs, is very much smaller. We speak of the egg as a speck; what name shall we use to designate the smallness of the germ? Yet, though so small, it is a complete, living, active, complex organization, a cluster of inspired molecules, wonderfully tenacious, and most mysteriously at work from the first of its impregnated life. Molecule after molecule moves toward the surface of the minute cluster, arranging themselves into three distinct tiers as trained soldiers, each knowing what is expected of him. Wonderful! Do you speak of the impossibility of a miracle? Here is one of the greatest magnitude, in the tiniest space! And what results! Miracles of life; beginnings on which science looks with no word of explanation. It is, but how is it? Where and by what hidden spring of power is it here? How is it brought about? What are the answers of science? It is dumb.

Quite as mysterious is the fact that this minute cluster of molecules called a human germ—apparently a mere atom of jelly—not only comprises the beginning of all the vessels, tissues and organs of the matured body, but it brings forth the special characteristics of the parents, the mental and physical peculiarities, the general bent of disposition, the special traits, tastes, preferences, and idiosyncracies, and often even the particular marks, growths and physical and mental expression. Truly, our origin must be divine; and this Divinity well deserves our service and our adoration.

THE USES OF RAIN.

The enjoyableness and usefulness of rain is not sufficiently appreciated. The idea of calling rainy days gloomy days shows hypochondria. A rain may be as delightful as sunshine. It is certainly important both for our health and happiness, and for the perfecting of animal and vegetable life. How over-burdened with impurities would the air become if it was not for the rain straining them from the atmosphere; and how sterile the earth would be if these were not carried into the ground to supply vegetable growth. This is not only true of the particles accumulating in the air, but also of the carbonic, ammoniacal, and other gases which are constantly rising; these would make the air unbearable, if it was not for the water in the air receiving them, and finally bringing them back to become again powers in the earth. And they do not all come back as they go up. They form various combinations, and thus still further enhance their value to the lower life of the earth. We say to the lower life, for they are poison to the human life, many of them are the results of animal decomposition, but these are just what vegetable life thrives on. Thus we have the constant round of life from the lowest to the highest, then back from the highest to the lowest.

There is no such thing as a dry atmosphere, and if there was, we could not live in it. There is as much water in the air as on the earth; the atmosphere is a very sea of water and the ocean is a very sea of air. The only difference is, in the former air predominates, and in the latter water predominates. The fish could not live without the air which surrounds every globule of water, and we could not live without the water which permeates every particle of air. It is also necessary for our health and happiness, and for the growth and maturity of all vegetable and animal life, that the waters on the earth and the waters above the earth shall be continually changing; so one goes up and the other comes down, making an interchange of everlasting currents. A pail of water is heavy, and you say, How could I throw this water up into the sky and have it remain there? But spread it out on a surface through which it cannot sink, and how quickly it will be drawn up into the sky and disappear. Thus have been drawn up all the waters of the earth—continually drawn up in minute globules, to be as continually returned as rain. All the great rivers are but the returning to the sea the water it has given to the sky.

Scientists, can you explain this? How does the water of the clouds get there, and the much greater quantity of water in the atmosphere that is transparent? How is this aerial sea retained there? How is this water gathered into clouds, and how can these clouds of water be so lightly thrown about by the rough winds? By what law

do these clouds pass down to us a portion of their waters, while the rest pass on as with the majesty of unseen wings? The law that governs this reciprocity, and the philosophy of it, who can tell? though for all of us, it is a interesting subject.

Let us therefore try to enjoy the rain, and even the hurricane, the rough winds and the wintry blasts, as well as the genial sunshine and the soft zephyrs. They are all good and invigorating, blessings without which this world would be uninhabitable.

PRUDENCE MUST ACCOMPANY EXPOSURE.

In a recent number of the ITEMS we endeavored to show that brawn was necessary to health; that even those made delicate, weak, and sickly by superabundance of clothing and too close housing may often be made strong by exercise and gradually increasing work in free air and sunshine, and that even rain and change of temperature will not injure if we gradually enure ourselves to them.

We enforced our position by referring to soldiers in long campaigns and physicians much exposed night and day, being generally healthy.

A writer reminds us that "It is not the exposure that benefits but the fresh air, plain food, and much exercise; that over-work and anything that exhausts the vitality is injurious."

We hope those who read our article will not carry our doctrine to extremes. Some, for instance, may expose themselves to a rainstorm and keep on their wet clothes when they return to their homes, or, if on a march, sleep in them, while most would suffer. Some may become damp and yet not be overcome by a strong cold wind; but most would be injured; some could do two day's work in one, and yet by food and rest be as ready for duty as though there had been no excess; but it would be folly to take this, or any of these other extremes, our examples.

We intended to emphasize the fact that many of our ills were from close housing, over clothing, much feasting, and criminal enervation; that we should be benefitted by rousing nature's energies, breathing more of God's oxygen, and living in simpler unison with God's laws, building in nerves, muscles, and organs, the vigor of health and the glow of happiness.

But take this gentleman's advice and not jump to thoughtless extremes, foolish exposures, and exhausting excesses.

The tobacco bill of the country last year was over $180,000,000, —or $3 for every man, woman and child.

Differences between Creosote and Carbolic Acid.—Creosote is a distillation from wood tar, carbolic acid from tar of mineral coal; creosote is an oil, carbolic acid an alcohol; creosote is a non-crystalizable fluid, carbolic acid, in its pure state, is always crystalized, except when quite warm; creosote is not soluble in water, carbolic acid is; creosote is not a caustic, carbolic acid is a powerful caustic; creosote is not a germicide, carbolic acid is.

Dr. Henry Leffmann, editor of *The Polyclinic*, (P. O. Box 791, Philadelphia), desires to obtain results of the new treatment of pulmonary consumption and phthisis by gaseous enemata, for publication in *The Polyclinic*. The correct therapeutic value of this method can only be arrived at by the collection of statistics, and he therefore requests any one who has administered the gas to communicate the result to him, the formula used, and any special information that may be useful.

Shall the American Dental Association omit its next yearly meeting? has been decided by the short word *no*. But why not have its meeting this year in Washington, just before or just after the sessions of the International Medical Association?

Dr. James W. White, editor of the *Cosmos* and literary partner in the S. S. White Dental Manufacturing Co., has been appointed by Mayor Fitler of Philadelphia, President of the Board of Charities and Correction in that city.

Connecticut Dental Law.—This State has just swung into line. Dr. Dill, of Hartford, was prominent in procuring its passage.

The University of Pennsylvania Alumni Society held its seventh meeting May 2d. It was an occasion of much interest, and drew together many honorable graduates of this honored institution.

The reading-rooms of dental colleges and dental departments of universities are welcome to the ITEMS OF INTEREST on application. The Vanderbilt University dental students send us a vote of thanks for the ITEMS. This is appreciated.

Dr. Geo. W. Worrell, of Marietta, Lancaster county, Pa., a member of the Harris Dental Association, of Lancaster county, died at his residence in this place, April 25th, 1887.—*G. P Gibhart, D. D. S., Marietta, Pa.*

Miscellaneous.

Motherhood and Babyhood.—I do not go into the baby-feeding business, and I do not intend to. My purpose is to give you a few aphorisms that you could study and thus get more of their significance. We all understand that we must eat to live; but we do not understand the changes through which the food must pass, in order to make pure pabulum and good tooth-blood. But it is by observing the old nurses and mothers that we catch some of the finest instruction of which medical men have become possessed. The chief point of study in this question is the chylopoetic system, in which there is a secretion of some elemental products that are solvents of the food, and such ferments as are necessary in the process of churning it into a homogeneous mass, which can then be converted into blood. Teething is a natural process, and should go on just as gently as the dew falls on the grass at night. If a child has a disturbance of the digestory apparatus, confine it to food that a child should feed on. Give it milk, and you may sometimes help the milk by putting a little lime in it. But do not boil the milk under the pretense of scalding it; do not heat it above 130° F. If milk is heated above 133° it requires the expenditure of an amount of energy on the part of the digestory apparatus which it may not be able to supply. In such case an intelligent physician would give a peptone, preparation of pepsin, holding a ferment that will promote the proper digestion of the food. Often you will see a mother that has an abundance of milk allow her baby to suck all the time, because she wants to get rid of the tension of the breast. Only healthy children have stomachs with vim enough to throw out the excess of food before it is coagulated. When the baby has green stools give it soda. When you do not know what to do, do nothing; hold still till symptoms develop, or ask counsel. Whether lime can be absorbed directly from the mineral kingdom or not is an interesting question. We ought to think about it, and see if it is so, and how it is. When you find a mother complaining of heartburn, you ask what kind of improper food she has taken. But she may have taken the best of food, and have overworked herself, or become nervous or worried, and thus been thrown into such a state while the process of reproduction is going on as to produce an acidulated condition. You must remember, there is no food we take that has not a sufficient amount of the elements necessary to build the body, if the digestory apparatus is in proper condition to appropriate it. There is an abundant supply of lime and magnesia and iron, and all the rest of the elements, in the ordinary food we eat. We must study the processes by which food is churned in the stomach into chyme, and converted into chyle, pabulum, blood, and protoplasm, before we can talk intelligently about this subject. Let us be careful in setting down as proved postulates any mere side issues or suppositions.

—*Cosmos.*

To Prevent Grass from Growing between bricks in a walk pour on brine or work salt between the bricks.

Artificial precious stones, the "Popular Science Monthly" states, have become an important article of trade. The products of some of the shops would almost deceive an expert, but the test of hardness is still infallible. The beautiful "French paste," from which imitation diamonds are made, is a kind of glass with a mixture of oxide of lead. The more of the latter the brighter the stone, but also the softer, and this is a serious defect. The imitation stones are now so perfectly made and are so satisfactory to those who are not very particular, that their influence begins to be felt in the market for real stones. By careful selection of the ingredients and skill and attention in manipulation, the lustre, color, fire and water of the choicest stones are, to the eyes of the layman, fully reproduced. There are a few delicacies of color that cannot be perfectly given, for they depend on some undiscoverable peculiarities of molecular arrangement, and not on chemical composition; but the persons who are to buy the stones know nothing of that. Yet Sidot, a French chemist, has nearly reproduced these peculiarities, including the dichroism of the sapphire, with a composition of which the base is phosphate of lime. Two other French chemists—Fremy and Feil—have produced rubies and sapphires having the same composition with the genuine stones and nearly equal hardness.

In Spiders the head and thorax are bound together in one piece, and the abdomen connected to it by a very slender neck. Though spiders are provided with hollow poison-fangs, there is no proof that the American species, at least, are poisonous. The jaws of the smaller varieties are too delicate to take hold of the human flesh; and the probability is, that even the largest ones are entirely harmless. The female spider is the most important member of the family. The males are small and inconspicuous, and in one case a female was found amid the bodies of a large number of her unfortunate husbands, whom she had destroyed, and thrown to one side,—a perfect female Bluebeard.

The parental love of the spider is very strong. The female carries, suspended on her legs, a small bag containing the eggs, which resemble white glass beads. If the bag is pushed away with a straw or stick, the creature will make the most desperate efforts to recover it. A spider was once found whose back appeared to have a granulated surface, but closer examination showed that she was entirely covered with her young. On trying to shake them off, they attached themselves to their mother by a thread; and on throwing her to the ground, she remained perfectly quiet until they had all pulled themselves back by means of their extemporized cable, and spread themselves over her body as before.

The Hermit Crab possesses the wonderful instinct of finding the cast-off shell of some other animal, which he occupies. As their size increases, they move out of the old house, and start off in search of a better-fitting one. They sometimes find a desirable residence already occupied by another hermit crab, and then an amusing but desperate fight takes place; and, if victorious, the house-hunter turns out the rightful occupant, and snugly ensconces himself in the shell, while the evicted tenant must move on until he finds another one.

A Typographic Dilemma.—A new paper out west was started under difficulties. It tells its own story as follows: "We began the publication of the Roccy Mountain *Cyclone* with some phew diphphiculties in the way. The type phounders phrom whom we bought our outphit phor this printing ophphice phailed to supply us with any ephs or cays, and it will be phour or phive weecs bephore we can get any. The mistaque was not phound out until a day or two ago. We have ordered the missing letters, and we will have to get along without them until they come. We don't lique the loox ov this variety ov spelling any better than our readers, but mistax will happen in the best regulated phamilies and iph the ph's and c's and x's and q's hold out, we shall ceep (sound the c hard) the *Cyclone* whirling aphter a phashion till the sorts arrrive. Its no joque to us, it's a serious aphphair."

The remarkable bleaching compound of Mr. Chas. Toppan, of Salem, Mass., consists of 3 parts, by measure, of mustard seed oil, 4 of melted paraffine, 3 of caustic soda, 20° Be., well mixed to form a saponaceous compound. Of this, 1 part of weight and 2 of pure tallow soap are mixed, and of this mixture 1 ounce for each gallon of water is used for the bleaching bath, and 1 ounce caustic soda, 20° Be., for each gallon is added, when the bath is heated in a close vessel, the goods entered, and boiled "until sufficiently bleached."

Hydrogen Per Oxide in Diphtheria.—Dr. Wm. B. Clark, of Indianapolis, writes that he has seen such wonderful results follow the use of hydrogen per oxide in diphtheria that it would be hard to induce him to use any other local remedy in that disease. After its application to the false membrane, the corroding effect is so great that the mouth and nose are filled with the froth. The membrane is quickly dissolved and easily expelled.—*The Medical Record.*

Bacteriotherapy.—Dr. Salama reports another case of advanced pulmonary phthisis treated according to Cantani's method, by inhalations of bacterium termo. Within five days an improvement was noted, the fever was less pronounced, and the expectoration was diminished in quantity, and contained a smaller number of tubercle bacilli. In two weeks the bacilli had wholly disappeared from the sputa, and the patient began to increase in weight and in general health.—*Med. and Surg. Reporter.*

Bar Lead for Tempering.—"I notice an article in a recent issue of your paper on hardening steel by aid of zinc bath. I found a man recently, in the United States Mint here, who bored holes through the hardest steel and plate glass with drills. He told me that he drove the point of the drill, heated to cherry red, into a cold bar of lead, and the result was a much harder temper than the acid bath."—*S. P. Davis, in Scientific American.*

The Horseshoe Crab presents a curious difficulty of classification, some naturalists considering it related to the trilobites, one of the earliest forms of life, while others class it with the scorpions.